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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/612,229

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James David Hensley

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03/21/2005

HEWLETT-PACKARD COMPANY

Intellectual Property Administration

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EXAMINER

NGUYEN, KHIEM D

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/612,229

Applicant(s)

HENSLEY ET AL.

Examiner

Khiem D. Nguyen

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 21-28 and 37-76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 21-28 and 37-76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION***Claim Rejections - 35 USC § 102***

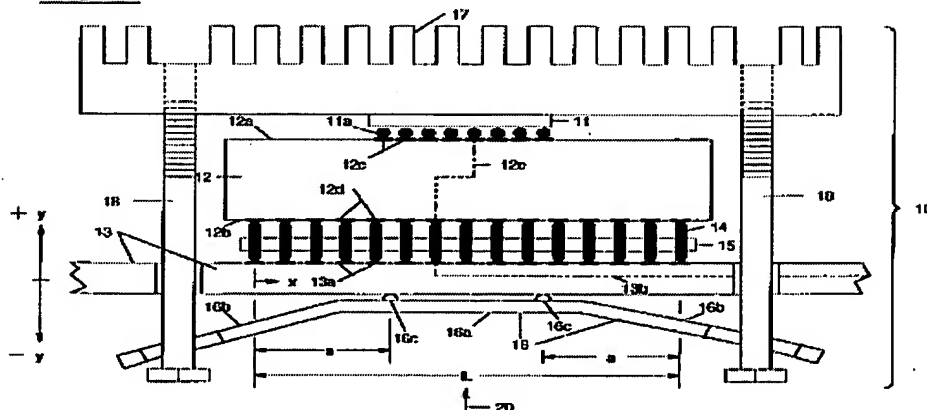
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 21-26, 28 and 37-76 are rejected under 35 U.S.C. 102(b) as being anticipated by Tustaniwskyj et al. (U.S. Patent 6,042,388).

In re claim 1, Tustaniwskyj discloses a method to assemble a pre-curved bolster plate 16 to one side of a substrate 13 having a first side and a second side, comprising: attaching a component 15 to an electrical contact area 13a on said first side of the substrate 13; and attaching the pre-curved bolster plate 16 on the second side of the substrate 13, wherein the pre-curved bolster plate is attached to the second side opposite the electrical contact area on the first side of the substrate 13 (col. 3, line 2 to col. 4, line 4 and FIG. 1).

FIG. 1

In re claim 2, Tustaniwskyj discloses wherein the component **15** is a land grid array (LGA) component (col. 3, lines 34-41).

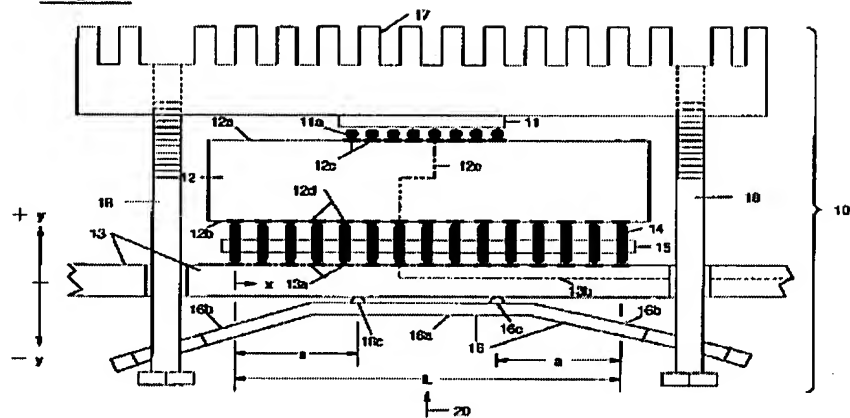
In re claim 3, Tustaniwskyj discloses wherein the substrate **13** is selected from a group of substrates consisting printed circuit board (PCB), multi-chip module (MCM), and a flexible substrate (col. 4, lines 15-25).

In re claim 4, Tustaniwskyj discloses wherein the pre- curved bolster plate **16** includes a material selected from the group consisting a stainless steel alloy, powder-coated spring steel alloy, a plated spring steel alloy, a painted spring steel alloy, a titanium steel alloy, a carbon steel alloy, a magnesium alloy, and an aluminum alloy (col. 3, lines 34-47).

In re claim 5, Tustaniwskyj discloses wherein the pre-curved bolster plate **16** has a spherical curvature (FIG. 1).

In re claim 6, Tustaniwskyj discloses wherein the pre- curved bolster plate **16** has a cylindrical curvature (FIG. 1).

In re claim 21, Tustaniwskyj discloses a method for providing support substrate, the method comprising: attaching a component **115** to an electrical contact area **13a** on a first side of the substrate **13**; and attaching a pre-curved bolster plate **16** on a second side **16c** of the substrate **13**, the pre-curved bolster plate **16** having a pre-calculated radius of curvature prior to attachment to the second side **16c** of the substrate **13** (col. 3, line 2 to col. 4, line 4 and FIG. 1).



In re claim 23, **Tustaniwskyj** discloses wherein the substrate 13 is selected from a group of substrates consisting of: printed circuit board (PCB), a multi-chip module (MCM), and a flexible substrate (col. 4, lines 15-25).

In re claim 24, Tustaniwskyj discloses wherein the pre- curved bolster plate 16 includes a material selected from a group consisting a stainless steel alloy, a powder-coated spring steel alloy, a plated spring steel alloy, a painted spring steel alloy, a titanium steel alloy, a carbon steel alloy, magnesium alloy, and an aluminum alloy (col. 3, lines 34-47).

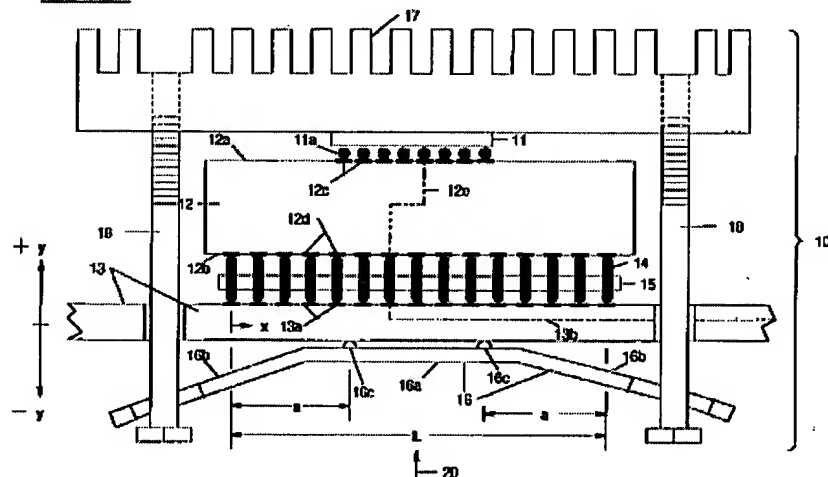
In re claim 25, **Tustaniwskyj** discloses wherein the pre- curved bolster plate **16** has a spherical curvature (FIG. 1).

In re claim 26, **Tustaniwskyj** discloses wherein the pre-curved bolster plate has a cylindrical curvature (FIG. 1).

In re claim 28, Tustaniwskyj discloses a substrate support assembly produced in accordance with the method of claim 21 (FIG. 1).

In re claim 37, Tustaniwskyj discloses a method for coupling a plate member to an electrical packaging assembly, the method comprising: providing an electrical packaging assembly (11, 15); providing a plate member 16 that is pre-curved; disposing the plate member 16 against the electrical packaging assembly; flexing the plate member towards the electrical packaging assembly to produce a flexed plate member 16; and coupling the flexed plate member to the electrical packaging assembly (col. 3, line 2 to col. 4, line 4 and FIG. 1).

FIG. 1



In re claim 38, Tustaniwskyj discloses wherein flexing comprises curving opposed ends of the plate member 16 towards a substrate 13 of the electrical packaging assembly (11, 14) (FIG. 1).

In re claim 39, Tustaniwskyj discloses wherein the flexing comprises curving opposed ends of the plate member 16 towards a substrate 13 of the

electrical packaging assembly (11, 15) until the plate member is generally flushed against the substrate 13 (FIG. 1).

In re claim 40, Tustaniwskyj discloses wherein the electrical packaging assembly comprises an electrical component (11, 15) having a plurality of leads 14 attached to an electrical contact area 13a of a substrate 13 (FIG. 1).

In re claim 41, Tustaniwskyj discloses wherein the electrical packaging assembly comprises an electrical component (11, 15) having a plurality of leads 14 attached to an electrical contact area 13a of said substrate 13 (FIG. 1).

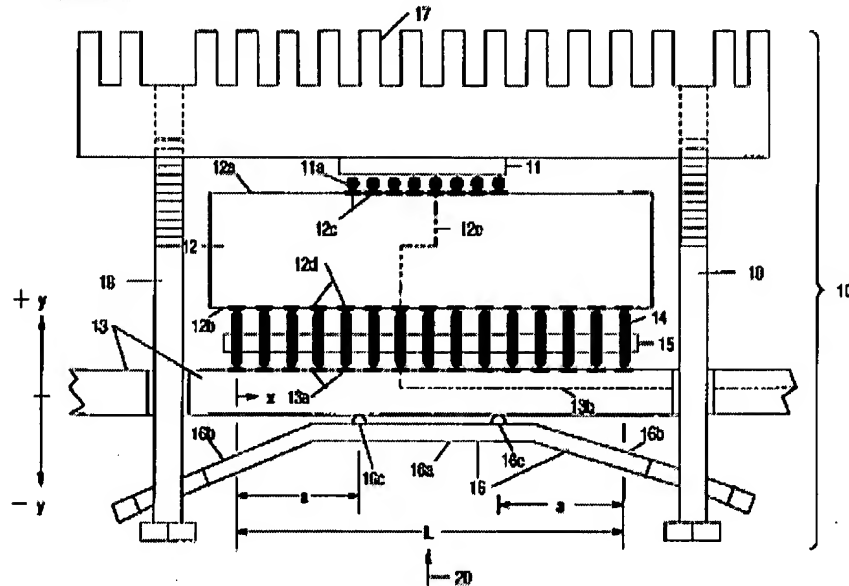
In re claim 42, Tustaniwskyj discloses wherein the plate member 16 is stamped to achieve a spherical curvature (FIG. 1).

In re claim 43, Tustaniwskyj discloses wherein said plate member 16 is stamped to achieve a cylindrical curvature (FIG. 1).

In re claim 44, Tustaniwskyj discloses wherein the plate member 16 is fabricated from a material selected from the group of materials consisting of: a stainless steel alloy, a powder-coated spring steel alloy, a plated spring steel alloy, a painted spring steel alloy, titanium steel alloy, a carbon steel alloy, a magnesium alloy, and an aluminum alloy (col. 3, lines 34-47).

In re claim 45, Tustaniwskyj discloses wherein the plate member 16 is fabricated from a material selected from the group of materials consisting a stainless steel alloy, a powder-coated spring steel alloy, a plated spring steel alloy, a painted spring steel alloy, a titanium steel alloy, carbon steel alloy, a magnesium alloy, and an aluminum alloy (col. 3, lines 34-47).

In re claim 46, Tustaniwskyj discloses a method for assembling a bolster plate to circuit member, the method comprising: providing a circuit member (11, 15); disposing a curved bolster plate 16 against the circuit member (11, 15); curving the bolster plate towards the circuit member to change the curved bolster plate into a flat bolster plate 16; and coupling the flat bolster plate to the circuit member (col. 3, line 2 to col. 4, line 4 and FIG. 1).

FIG. 1

In re claim 47, Tustaniwskyj discloses wherein curving 16 comprises curving opposed ends of the bolster plate towards the circuit member (FIG. 1).

In re claim 48, Tustaniwskyj discloses wherein the curving comprises curving opposed ends of the bolster plate 16 towards the circuit member until the bolster plate is generally flushed against the circuit member (FIG. 1).

In re claim 49, Tustaniwskyj discloses wherein the circuit member 15 includes an electrical contact area 12d having a plurality of leads 14 attached thereto (FIG. 1).

In re claim 50, Tustaniwskyj discloses wherein the circuit member 15 includes an electrical contact area 12d having a plurality of leads 14 attached thereto.

In re claim 51, Tustaniwskyj discloses wherein the bolster plate 16 is stamped to achieve a spherical curvature (FIG. 1).

In re claim 52, Tustaniwskyj discloses wherein the bolster plate 16 is stamped to achieve a cylindrical curvature (FIG. 1).

In re claim 53, Tustaniwskyj discloses wherein the bolster plate 16 is fabricated from a material selected from the group of materials consisting of: a stainless steel alloy, a powder-coated spring steel alloy, a plated spring steel alloy, painted spring steel alloy, a titanium steel alloy, a carbon steel alloy, a magnesium alloy, and an aluminum alloy (col. 3, lines 34-47).

In re claim 54, Tustaniwskyj discloses wherein the bolster plate 16 is fabricated from a material selected from the group materials consisting of: a stainless steel alloy, a powder-coated spring steel alloy, a plated spring steel alloy, painted spring steel alloy, a titanium steel alloy, carbon steel alloy, a magnesium alloy, and an aluminum alloy (col. 3, lines 34-47).

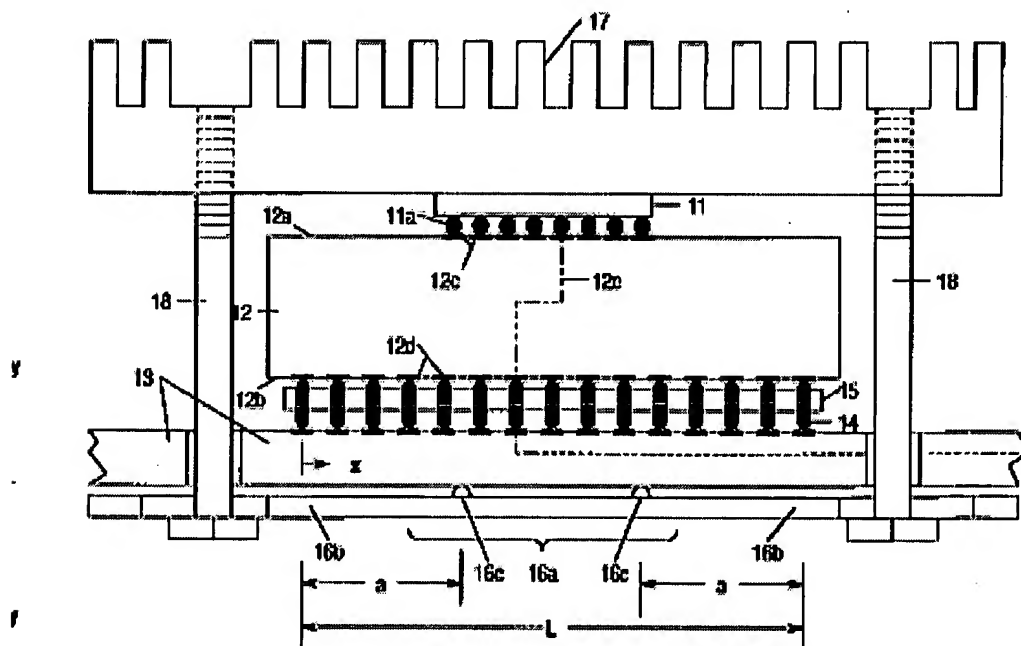
In re claim 55, Tustaniwskyj discloses an assembly produced in accordance with the method of claim 46 (FIG. 1).

In re claim 56, Tustaniwskyj discloses that the pre-curved bolster plate 16 has a radius of curvature (FIG. 1).

In re claim 57, Tustaniwskyj discloses that the radius of curvature is pre-calculated (FIG. 1).

In re claim 58, Tustaniwskyj discloses wherein the radius of curvature is pre-calculated such that the pre-curved bolster plate 16 deflects into a flat plate (FIG. 3) after a clamping force is applied to the component which is assembled on the substrate 13 and to the pre-curved bolster plate 16 which is assembled on the substrate (col. 2, lines 26-34 and col. 4, lines 15-25).

FIG. 3



In re claim 59, Tustaniwskyj discloses wherein the pre-curved bolster plate 16 has an entire surface that is in contact with the substrate 13 when a

clamping force is applied to the pre-curved bolster plate **16** and to the substrate **13** (FIG. 3).

In re claim 60, **Tustaniwskyj** discloses that the method of claim 1, further comprising: clamping the component and the bolster plate to the substrate (FIG. 3).

In re claim 61, **Tustaniwskyj** discloses that the method of claim 1, further comprising: clamping the component and the bolster plate **16** to the substrate **13** by use of a clamp (FIG. 3).

In re claim 62, **Tustaniwskyj** discloses that the method of claim 1, further comprising: clamping the component and the bolster plate **16** to the substrate **13** by bolting a clamp the substrate (FIG. 3).

In re claim 63, **Tustaniwskyj** discloses that the method of claim 1, further comprising: clamping the component to the substrate **13** by bolting a clamp to the substrate by use of a bolt and a spring (FIG. 3).

In re claim 64, **Tustaniwskyj** discloses an assembly produced in accordance with the method of claim 1 (FIGS. 1 and 3).

In re claim 65, **Tustaniwskyj** discloses that the radius of curvature is pre-calculated such that the pre-curved bolster plate **16** deflects into a flat plate after a clamping force is applied to the component which is assembled on the substrate **13** and to the pre-curved bolster plate which is assembled on the substrate (FIGS. 1 and 3)

In re claim 66, **Tustaniwskyj** discloses that the plate member has a radius of curvature (FIG. 1).

In re claim 67, Tustaniwskyj discloses that the radius of curvature is pre-calculated (FIG. 1).

In re claim 68, Tustaniwskyj discloses that the radius of curvature is pre-calculated such that the plate member deflects into the flat plate member after a clamping force applied to the electrical packaging assembly and to the plate member which is assembled on the electrical packaging assembly (FIGS. 1 and 3).

In re claim 69, Tustaniwskyj discloses that the curved bolster plate 16 has a radius of curvature (FIG. 1).

In re claim 70, Tustaniwskyj discloses wherein the radius of curvature is pre-calculated (FIG. 1).

In re claim 71, Tustaniwskyj discloses wherein the radius of curvature is pre-calculated such that the curved bolster plate 16 deflects into the flat bolster plate after a clamping force is applied to the circuit member and to the curved bolster plate which is assembled on the circuit member (FIG. 3).

In re claim 72, Tustaniwskyj discloses wherein the curved bolster plate 16 has an entire surface that is in contact with the circuit member when a clamping force is applied to the curved bolster plate and to the circuit member (FIG. 3).

In re claim 73, Tustaniwskyj discloses wherein coupling the flat bolster plate comprises: clamping a component and the bolster plate 16 to the circuit member (FIGS. 1 and 3).

In re claim 74, Tustaniwskyj discloses wherein coupling the flat bolster plate comprises: clamping a component and the bolster plate 16 to the circuit member by use of a clamp (FIGS. 1 and 3).

In re claim 75, Tustaniwskyj discloses wherein coupling the flat bolster plate comprises: clamping a component and the bolster plate 16 to the circuit member by bolting a clamp to the circuit member.

In re claim 76, Tustaniwskyj wherein coupling the flat bolster plate comprises: clamping a component to the circuit member by bolting a clamp to the circuit member by use of a bolt and a spring (FIGS. 1 and 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tustaniwskyj et al. (U.S. Patent 6,042,388).

In re claims 7 and 27, Tustaniwskyj does not explicitly disclose wherein the pre-curved bolster plate has a radius curvature in excess of 100 inches (254 centimeters). However, there is no evidence indicating that the radius curvature is critical and it has been held that it is not inventive to discover the optimum or workable radius curvature of a result-effective variable within given prior art conditions by routine experimentation. See MPEP § 2144.05. Note that the specification contains no disclosure of either the critical nature of the claimed

dimensions of any unexpected results arising there from. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Response to Applicant's Arguments and Amendment

Applicant's arguments filed December 13th, 2004 have been fully considered but they are not persuasive.

Applicants contend that the reference Tustaniwskyj et al. (U.S. Patent 6,042,388) herein known as Tustaniwskyj does not disclose nor suggest a plate 16 that is pre-curved.

In response to Applicants' contention that Tustaniwskyj does not disclose nor suggest a plate 16 that is pre-curved, Examiner respectfully disagrees. Applicants are reading the specification into the claims. During patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification. In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). As discloses by Tustaniwskyj in FIG. 1, the bolster plate 16 is pre-curved before it is deflects into a flat bolster plate 16 (FIG. 3) after a clamping force is applied to the component which is assembled on the substrate

Art Unit: 2823

13 and to the pre-curved bolster plate 16 which is assembled on the substrate 13 (col. 2, lines 26-34 and col. 4, lines 15-25).

For these reasons, examiner holds the rejection proper.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D. Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:30 AM - 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2823

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K.N.
March 15th, 2005



**W. DAVID COLEMAN
PRIMARY EXAMINER**